

Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Claims 1, 3, 5 and 7 have been amended to recite that the external electrode has a plating layer provided on a surface of the external electrode, and that the protective layer is a water repellent protective layer which is provided on both the ceramic element and the plating layer. Support for these amendments can be found in the specification on page 4, lines 16-19 and page 4, line 22 to page 5, line 11.

The patentability of the present invention over the disclosure of the reference relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Thus, the rejection of claims 1-8 under 35 U.S.C. § 102(b) as being anticipated by Ikemoto et al. is respectfully traversed.

The Examiner takes the position that Ikemoto et al. disclose a ceramic device comprising a ceramic element, an external electrode on said ceramic element, and a protective layer on said ceramic element and external electrode. The Examiner further asserts that Ikemoto et al. teach that the protective layer is formed through impregnating a compound into said ceramic element and external electrode and through dehydration condensation. The Examiner asserts that the compound of Ikemoto et al. can be $R-C_nH_{2n}-Si-(OR')_3$, as in Applicants' claim 1, or $R-O-C_nH_{2n}-Si-(OR')_3$, as in Applicants' claim 3.

However, Applicants have amended the claims to require that the water repellent protective layer is present on both the ceramic element and the plating layer.

Ikemoto et al. do not disclose or suggest that a water repellent protective layer is present on the plating layer. On the contrary, Ikemoto et al. teach that the plating step is performed at the end of the process, after the chip inductor is immersed into the coating liquid.

The coating liquid 33 ... is put into a container 34, and the chip inductor 32 obtained at the before production process in it is immersed for about 10 minutes ...

[T]he chip inductor 32 is dried for about 20 minutes at ejection and about 160-degree C elevated temperature.

Nickel plating is performed so that the external electrode 31 of the chip inductor 32 obtained at the before production process may finally be covered, solder plating of tin etc. is performed so that this nickel plating may be covered further, and the chip inductor which is a finished product is manufactured.

(See paragraphs 0047-0049 of the reference, emphasis added.) The “before production process”, referred to above, is for making a protective layer on a ferrite sintered compact 30, in order to make the chip inductor (see paragraph 0042 of the reference). Paragraphs 0047 through 0049 teach that the external electrode, which is part of the chip inductor made in paragraph 0042, is not provided with a protective layer until the end of the process. More specifically, the chip inductor, including external electrodes is formed (paragraph 0042), then the entire chip inductor is immersed into the coating liquid (paragraph 0047), dried (paragraph 0048), and then nickel plating is performed so that the external electrodes may finally be covered (paragraph 0049). Therefore, a water repellent protective layer is not provided on a plating layer at a surface of an external electrode, as required by the amended claims.

Additionally, Ikemoto et al. state:

... since the external electrode 15 does not react and (1) does not serve as an organic silicon compound with water repellence, (2) plating liquid and good contact are maintained, and plating films, such as nickel and solder, are formed in stability.

(See end of paragraph 0035, emphasis and numbers in parentheses added). Portion (1) of the above sentence indicates that a water repellent protective layer is not provided on an external electrode of Ikemoto et al. Portion (2) describes that the structure indicated in portion (1) provides positive effects. This passage teaches away from Applicants’ invention, by providing motivation for one skilled in the art to not provide a water repellent protective layer on an external electrode.

Therefore, Ikemoto et al. lack the teaching of a water repellent protective layer on a plating layer, which is provided on the surface of an external electrode. It is unobvious then, for the protective layer (referred to as the coating layer in Ikemoto et al.) to be present on both the ceramic element and the plating layer, as required by Applicants’ amended claims.

Regarding claims 5-8, the Examiner also asserts that Ikemoto et al. teach a method of manufacturing a ceramic device comprising the steps of providing a ceramic electronic device including a ceramic element and an external electrode on said ceramic element, plating the external electrode, immersing the ceramic electronic device into a solution containing a compound expressed by one of the above listed formulas, taking out the immersed ceramic device from the solution and subjecting the ceramic device to heat treatment; wherein the step of providing the ceramic electronic device includes the sub-steps of forming the ceramic element through stacking an internal electrode and a ceramic layer and forming external electrodes on the ceramic sheet, being electrically connected to the internal electrode.

However, regarding amended claims 5 and 7, Ikemoto et al. do not disclose or suggest immersing the ceramic electronic device into the solution after the step of plating the external electrode.

That is, as indicated above, Ikemoto et al. teach that:

Nickel plating is performed so that the external electrode 31 of the chip inductor 32 obtained at the before production process may finally be covered, solder plating of tin etc. is performed so that this nickel plating may be covered further, and the chip inductor which is a finished product is manufactured. (See paragraph 0049, emphasis added.)

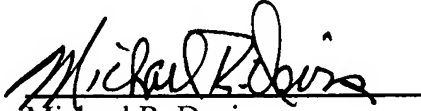
The “before production process” is a process for making a protective layer on a ferrite sintered compact 30 as described in paragraph 0042. Paragraph 0049 of Ikemoto et al. means that the ceramic electronic device is immersed into a solution before the step of plating the external electrode.

For these reasons, Applicants take the position that the invention of claims 1-8 is clearly patentable over Ikemoto et al.

Therefore, in view of the foregoing amendments and remarks, it is submitted that the ground of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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